

The Future of Food Processing Conference

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MILES WILLARD TECHNOLOGIES, LLP

Waterless Potato Flake Technology

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MWT HISTORY

Miles Willard co-inventor dehydrated potato flake process, 1956

Research Director, Rogers Brothers Company (now Basic American Foods), 1955-1964

Started successful consulting business in 1964

Moved to current location and constructed multi-purpose pilot plant facility in 1989

Converted business to employee owned, Miles Willard Technologies, LLP, January 1, 1998

PRODUCT DEVELOPMENT

1971 Launch of Hula Hoops in UK

64 Worldwide product introductions
since 1971



Keebler Salted Snack Development 1981 – 1996
13 product launches

Clients--62 Domestic, 42 Foreign
Countries Represented--24

Why

Process Engineering?

- U.S. Patent 2,759,832 -- August 21, 1956
Miles Willard & James Cording, USDA
- Dehydrated potatoes are significant to snack development
- Understand advantages and limitations of dehydrated potatoes
- No significant innovation in 40 years
- Water consumption and waste water issues

U.S. PATENT 6,197,358

WATERLESS PROCESS AND SYSTEM FOR MAKING DEHYDRATED POTATO PRODUCTS

Inventors: LaRue Bunker and Kyle E. Dayley



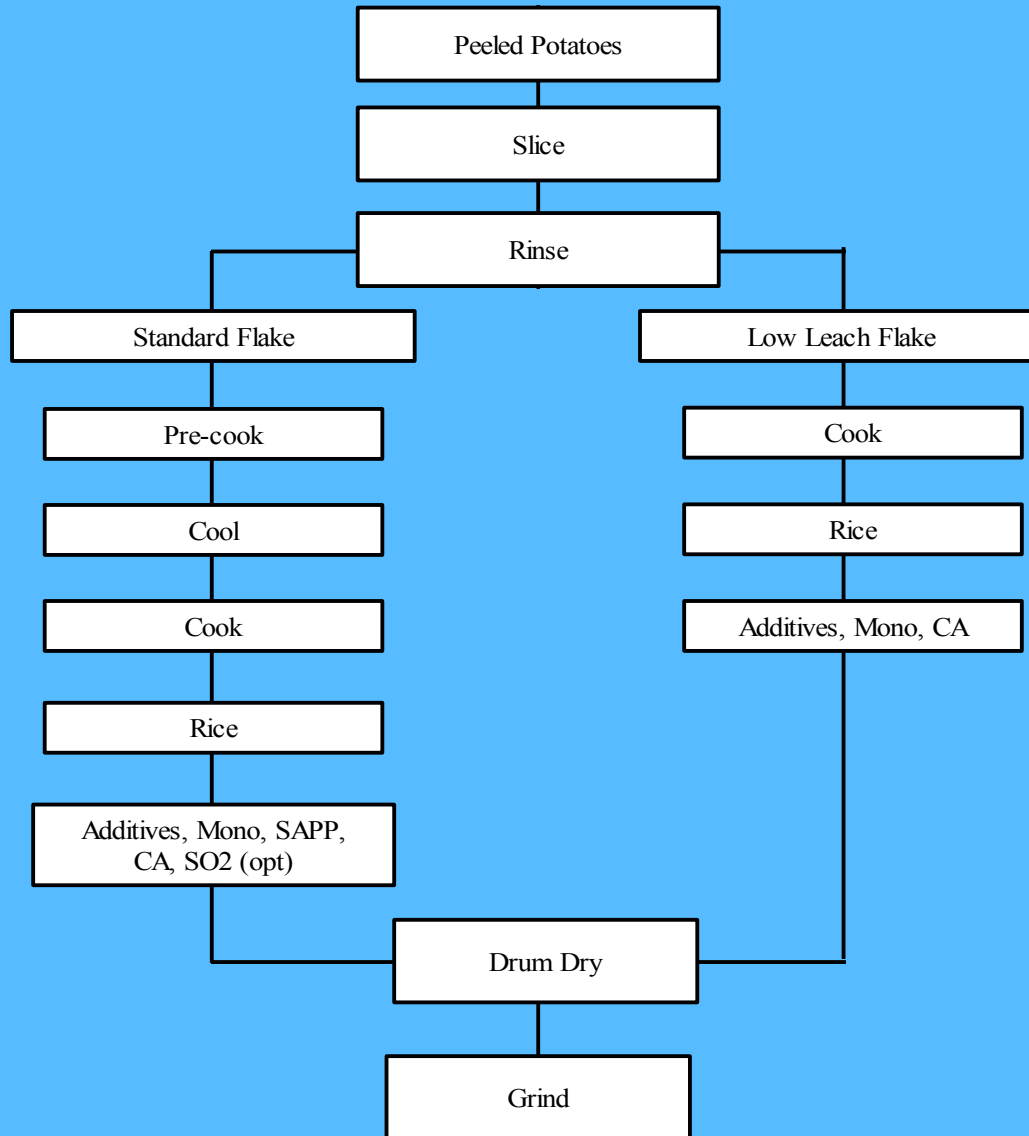
The process...

- Precooked with steam
- Cooled by vacuum
- Cooked with steam
- Leaching minimized
- Effluent from each step retained

The result...

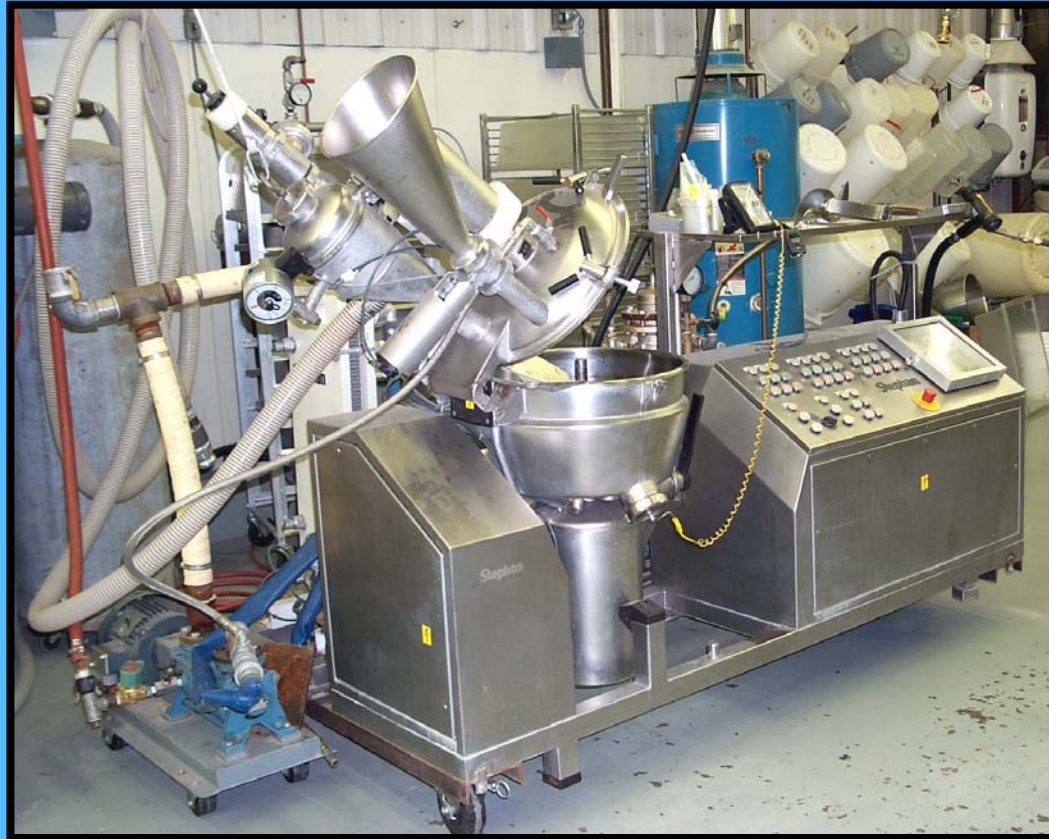
- Significantly reduced water usage
- Less waste water generated
- Reconstituted product has superior texture and flavor when compared with product made using conventionally process

Potato Flakes



Why

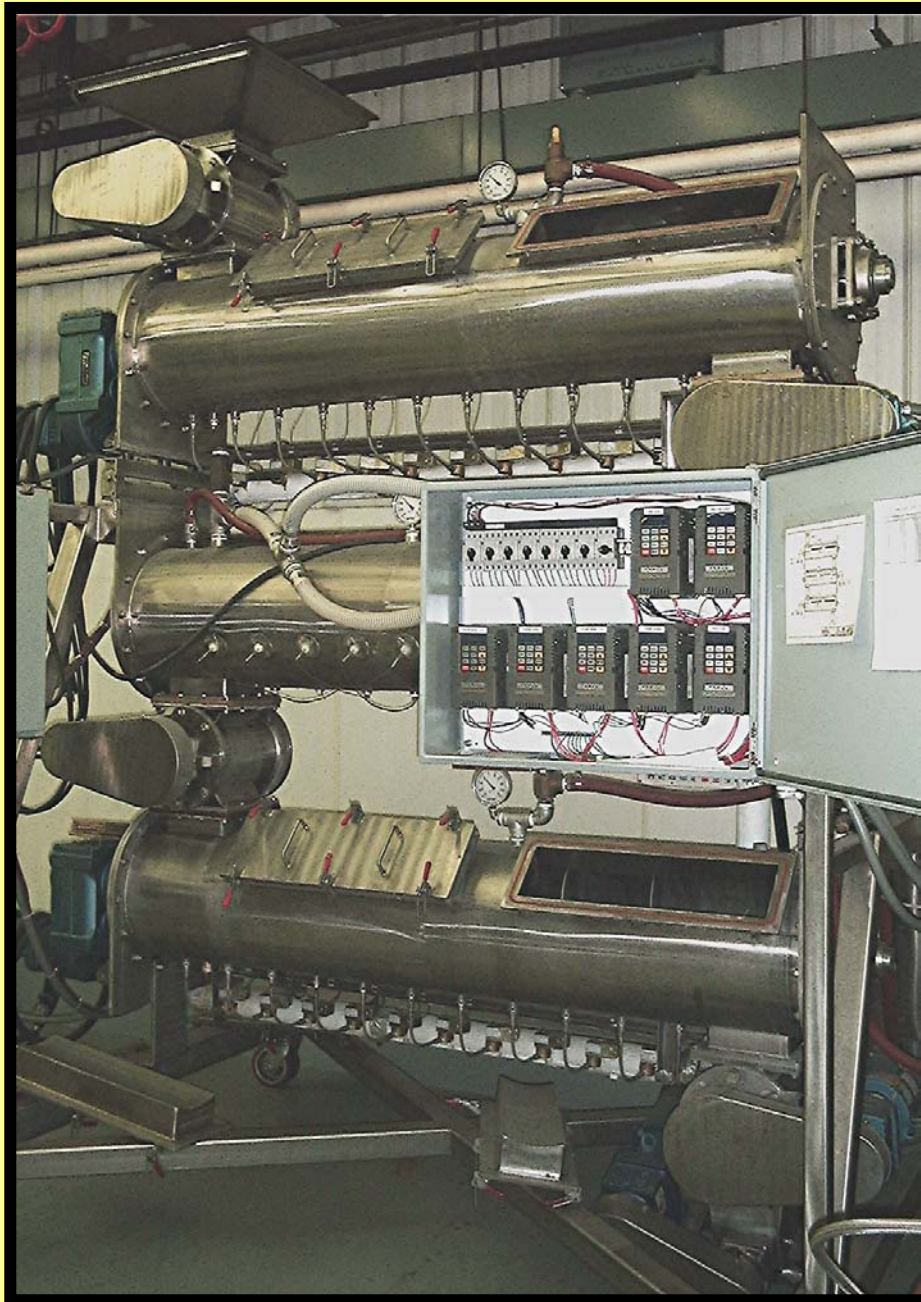
did MWT think it could make flakes using a waterless process?



Pre-cook

Cool

Cook



MWT Pilot Plant
Waterless Unit

Process Summary

	Hourly Totals*		Percent Reduction
	Current	Proposed	
Infeed lb/potatoes/hr	12,000	11,235	6
Water Usage gallons/hr	10,848	6,122	44
Steam Use MBtu/hr	12.07	10.96	9
BOD ppm	2,031	1,723	--
BOD Load lbs/hr	183.8	88	52
TSS	2,878	2,350	--
TSS Load lb/hr	260.4	120	54

*Basis = 2000 lbs finished flakes @ 8% moisture

INNOVATIVE NEW POTATO FLAKE PROCESS

MWT PATENTED TECHNOLOGY

Energy, Water & Waste Impact

- 44% decrease in water usage
- 52% decrease in BOD loadings
- 54% decrease in total suspended solids
- 9.2% decrease in steam usage overall
- 32% decrease in steam usage in precook and cook
- 40% decrease in electrical usage (including waste treatment)
- 6% decrease in raw potatoes

Technology

- Standard flake/granule process
- Precook with steam
- Cool with vacuum and contact cooling
- Precooker, cooler, cooker triple jacketed
- Shorter precook and cool times
- Stacked system
- Partnered with Idaho Steel Products
- Infeed and exit rotary valves for each piece

Special thanks to:

***Idaho Steel Products for their professionalism
and expertise in dehydrated flake processing!***

Any questions, contact...

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